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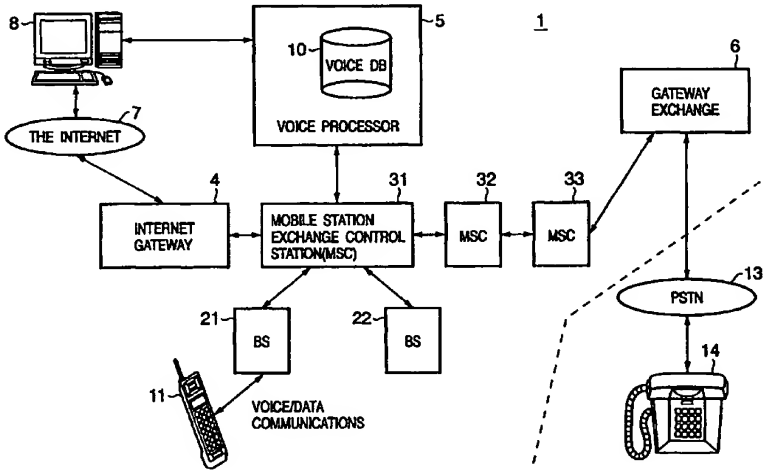

(57) Abstract: An electronic bulletin board service system is realized as capable of providing a BBS easily used with a terminal having a small display screen such as a mobile radio communications terminal. The system includes a BBS host 8 for processing a character message, and a voice processor 5 for recording and reproducing voice data associated with a character message. When the BBS host 8 receives a read request for a character message having associated voice data, it notifies the terminal 11 of the call number to the voice processor 5 for reproducing associated voice data together with character message data. Furthermore, when a new message is generated, a call number to the voice processor 5 is contained in the display data of the message generation screen for recording voice associated with the message.

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DESCRIPTION

ELECTRONIC BULLETIN BOARD SERVICE SYSTEM AND CONTROL METHOD THEREOF

TECHNICAL FIELD

The present invention relates to an electronic bulletin board service system (BBS) and a controlling method thereof, and more specifically relates to an electronic bulletin board service system capable of processing character information and voice information, and a control method for the system.

BACKGROUND ART

An electronic bulletin board system (BBS) has been widely used as a system for realizing a one-to-multi information exchanging process since the so-called personal computer communications age. Recently, as an Internet connection service becomes more and more popular, a rapidly increasing number of the BBS's provided on a so-called home page have been utilized.

FIG. 11A shows an example of the BBS provided on a home page. As shown in FIG. 11A, a BBS is normally formed in a format in which a user inputs a topic and another user answers with his or her comment. On the initial screen, a topic and an indented title of a comment are displayed.

In the example shown in FIG. 11A, the title is not preceded by a 'Re:', a non-indented message refers to a topic, and a message containing a title preceded by 'Re:' displayed as indented following the topic refers to a comment.

On the initial screen, as shown in FIG. 11A, in addition to the title, for example, the name of a sender (handle name), the date of generation, etc. are displayed in many cases. When link of 'GENERATE A NEW TOPIC', 'DISPLAY THE NEXT PAGE', or 'RETURN TO THE PREVIOUS PAGE' displayed at the bottom on the initial screen is selected, a message generation screen to generate a new topic or a next page/previous page is displayed.

The title displayed on the initial screen is link-displayed. When a desired title is selected, the entire text of the message is displayed (FIG. 11B). On the all text display screen, the title, the message sender name, the date of generation, and the entire text of the message are displayed. At the bottom on the screen, the link of 'RESPOND', 'GENERATE A NEW TOPIC', and 'RETURN' is displayed.

When 'RESPOND' is selected, a comment generation screen for the message being displayed is displayed. When 'GENERATE A NEW TOPIC' is selected, a screen for generating a new message as a topic is displayed, as the same link on the initial screen is selected. When 'RETURN' is selected, the initial screen (FIG. 11A) is displayed.

Thus, in the BBS, opinions can be exchanged among users by a plurality of users making a chain of comments on an input topic.

Conventionally, the above mentioned BBS has been provided for computers. However, apparatuses capable of accessing the Internet other than computers also has been developed lately. A typical example is a mobile radio communications terminal such as a portable phone, etc.

Since a mobile radio communications terminal is designed with portability emphasized, the display screen is also small. Therefore, when the BBS provided on the home page of the Internet is viewed from a mobile radio communications terminal, the number of characters displayed on one screen is limited, and it is difficult to find a desired title from a number of titles.

In addition, since the number of displayed characters on one screen is small when the text of a detected message is read, the message has to be read by frequently scrolling the view, which is inconvenient.

Furthermore, when a message is to be transmitted to the BBS, characters have to be input using a ten-key pad, thereby requiring a laborious operation when a long sentence is input.

DESCLOSURE OF INVENTION

The present invention has been developed to solve the above mentioned problems, and aims at realizing an

electronic bulletin board service system capable of providing an easily operated BBS for a terminal unit having a small display screen such as a mobile radio communications terminal.

That is, the gist of the present invention resides in an electronic bulletin board service system including: a voice processor connected to a telephone network and capable of reading and recording voice data; and a server device, connected to a computer network, having a character message database storing character messages, reading the character message requested at a read request from the character message database, and transmitting the message. With the configuration, the server device includes at least one of: message transmission means for transmitting, in response to the read request, the data of a requested character message to a sender of the read request when the read request for a character message associated with the voice data is received, and transmitting voice reproducing data required to allow the voice processor to read the voice data associated with the character message to the sender of the read request; and message generation data transmission means for transmitting, in response to a generation request for a new character message to be accumulated in the character message database, the data required to generate a character message, and the voice recording data required to record the voice associated with

the new character message using the voice processor to a sender of the generation request.

Another gist of the present invention resides in a method of controlling an electronic bulletin board service system including: a voice processor connected to a telephone network and capable of reading and recording voice data; and a server device, connected to a computer network, having a character message database storing character messages, reading a requested character message in response to a read request from the character message database, and transmitting the message. With the configuration, the method includes at least one of: in the server device, transmitting, in response to the read request, the data of a requested character message to a sender of the read request when the read request for a character message associated with the voice data is received, and transmitting voice reproducing data required to allow the voice processor to read the voice data associated with the character message to the sender of the read request; and in the server device, transmitting, in response to a generation request for a new character message to be accumulated in the character message database, the data required to generate a new character message, and voice recording data required to record the voice associated with the new character message using the voice processor to a sender of the generation request.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 shows an example of the entire configuration of the electronic bulletin board system according to an embodiment of the present invention;

FIG. 2 is a block diagram of an example of the configuration of the voice processor 5 shown in FIG. 1;

FIG. 3 is a block diagram of an example of the configuration of the BBS host 8 shown in FIG. 1;

FIG. 4 is a flowchart of an operation of the BBS host 8 shown in FIG. 1;

FIGS. 5A to 5E show examples of the screen displayed on a mobile radio communications terminal;

FIG. 6 is a flowchart of the voice reproducing process performed by the voice processor 5 according to a first embodiment of the present invention;

FIG. 7 is a flowchart of the voice recording process performed by the voice processor 5 according to the first embodiment of the present invention;

FIGS. 8A to 8E show examples of the configuration of the message data according to the first embodiment of the present invention;

FIG. 9 is a flowchart of the operation of the BBS host 8 according to a second embodiment of the present invention;

FIG. 10 is a flowchart of the voice recording process performed by the voice processor 5 according to the second embodiment of the present invention; and

FIGS. 11A to 11B show examples of the screen displayed in the conventional BBS.

BEST MODE FOR CARRYING OUT THE INVENTION

(First Embodiment)

The preferred embodiments of the present invention are described below in detail by referring to the attached drawings.

FIG. 1 is a block diagram of an example of the entire configuration of the mobile radio communications system as an example of the electronic bulletin board service system according to an embodiment of the present invention.

In FIG. 1, a mobile radio communications system 1 comprises a subscriber terminal (mobile radio communications terminal) 11, base stations (BS) 21 and 22, mobile controlling and switching center (MSC) 31 to 33, an Internet gateway 4, a voice processor 5, and a gateway exchange 6.

In the example shown in FIG. 1, the subscriber terminal 11 is in the service area of the base station 21, and the base stations 21 and 22 are under control of the MSC 31. The MSCs 32 and 33 also contain a plurality of base stations to be managed, and a plurality of subscriber terminals managed by each base station although they are not shown in FIG. 1. The number of base stations managed by each MSC and that of subscriber terminals managed by each base station can be optionally determined.

The MSCs 31 to 33 according to the present embodiment control an exchanging process in voice communications and data communications. In addition, the MSCs 31 to 33 communicate control signals, etc. required to control the exchanging process through a common line not shown.

The gateway exchange 6 that functions as an interface between the mobile radio communications system 1 and a public switched telephone network (PSTN) 13 is connected to the MSC 33. A line is connected to a fixed subscriber terminal 14 connected to the PSTN 13 and a subscriber terminal belonging to the mobile radio communications system 1 through the gateway exchange 6.

The voice processor 5 for managing the voice data attached to a message is connected to the MSC 31. The voice processor 5 comprises a voice database (DB) 10 storing voice data attached to a message of the BBS and voice data such as voice guidance, etc. to a subscriber terminal 11 in the format in which data can be reproduced by the voice processor 5, and performs processes to record and reproduce voice. The voice processor 5 is connected to communicate with a BBS host 8 for managing the BBS service.

In the present embodiment, the subscriber terminal 11 can perform not only voice communications, but also packet communications, and perform, by pressing the key for packet communications on the terminal, data communications with another subscriber terminal or a computer-utilized

apparatuses, etc. through the line different from the line for voice communications.

The Internet gateway 4 functions as an interface between the mobile radio communications system 1 and the Internet 7, and connects a device accessible through the Internet 7 with a terminal belonging to the mobile radio communications system 1.

The BBS host 8 is a computer such as an HTTP server (WEB server), etc., and a service management device for providing a BBS to devices which are accessible through the Internet 7. According to the present embodiment, the subscriber terminal 11 can communicate with a terminal in the Internet through the Internet gateway 4. Therefore, the BBS host 8 can provide a BBS for the subscriber terminal 11 as well as other computer-utilized devices.

In the present embodiment, the voice processor 5 and the BBS host 8 can be realized using a general-purpose computer device having a necessary communications interface.

FIG. 2 is a block diagram of an example of the configuration of the voice processor 5 according to the present embodiment. The voice processor 5 comprises a CPU 51 for controlling the entire system, ROM 52 for storing a program executed by the CPU 51 and various data, a network I/F 54 which is an interface for communicating data with the BBS host 8, RAM 55 used as a work area, etc. of the CPU 51, a communications I/F 56 for communicating voice with

a subscriber terminal through an MSC 31, a DTMF detector 57 for detecting a key pressed at a subscriber terminal, and an HDD 58 storing a voice response application and a program executed by the CPU 51.

It is obvious that other peripherals, for example, a display device, an input device (keyboard, mouse, etc.) an external storage device, etc. may be connected.

Each component is connected to each other through a bus (data bus, address bus, and control bus) of the CPU 51. The DTMF detector 57 is directly connected to the communications I/F 56 to detect a pressed terminal key during the communications.

The voice recording and reproducing processes in the voice processor 5 can be realized either by the CPU 51 executing a reading program or by dedicated hardware.

Thus, the voice processor 5 according to the present embodiment can be optionally configured such that it can communicate with a subscriber terminal in the mobile radio communications system 1, and can function as a terminal capable of communicating data with the BBS host 8.

FIG. 3 is a block diagram of an example of the configuration of the BBS host 8. The BBS host 8 comprises a CPU 61 for controlling the entire system, ROM 62 for storing a program executed by the CPU 61 and various data, a display device 63, a network I/F 64 which is an interface for communicating data with the Internet 11 and the voice processor 5, RAM 65 used as a work area, etc. of the CPU

61, an input device 66 comprising a keyboard, a pointing device, etc. used for inputting characters in a predetermined column on the displayed screen on the display device 63 and pointing to a button of an icon and a GUI, a user DB 67 storing information about a user such as a conversion table for converting a handle name and an electronic mail address, etc., and an HDD 68 storing a program executed by the CPU 61, an input message, etc.

Each component is connected with each other through a bus (data bus, address bus, and control bus) of a CPU 61. Other peripherals can be connected. Such a central process server 1 can be realized by a general-purpose computer device having a network interface.

Described below is the procedure in which the BBS provided by the BBS host 8 is used from a mobile radio communications terminal 11. According to the present embodiment, a message input in the BBS is viewed, a message is input, voice is recorded and reproduced, etc. interactively by communicating data in packet communications, etc. between the mobile radio communications terminal 11 and the BBS host 8.

Practically, a line is established between the mobile radio communications terminal 11 and the Internet gateway 4 upon a subscriber pressing the connection button for data communications provided in the mobile radio communications terminal 11. Then, communications using a TCP/IP protocol can be realized between the mobile radio communications

terminal 11 and the BBS host 8 through the Internet 7 by inputting the URL, IP address, etc. of the BBS host 8 using a key of the mobile radio communications terminal 11. With the configuration, bi-directional communications based on the HTTP, etc. are performed, and the interactive communications between the mobile radio communications terminal 11 and the BBS host 8 can be realized.

(Operation of BBS host)

Described below is the operation of a BBS host performed when utilizing a BBS provided by the BBS host 8 from the mobile radio communications terminal 11 by referring to the flowchart in FIG. 4.

FIG. 4 is a flowchart of the process performed by the BBS host 8 after the subscriber terminal (mobile radio communications terminal) 11 belonging to the mobile radio communications system 1 is connected to the BBS host 8.

First, in step S101, the initial screen display data of a BBS is transmitted. According to the present embodiment, it is assumed that the initial screen of a BBS displays the title of a message as shown in FIG. 11A. FIG. 5A shows an example of an initial screen displayed on the mobile radio communications terminal 11. The screen display data transmitted from the BBS host 8 to the mobile radio communications terminal 11 can be in any form if it can be interpreted in an application of a terminal. For example, it can be written in a general-purpose markup language such as the HTML (SGML, XML), etc. or the extension

of its instruction, a WAP, etc. Other forms are obviously acceptable. The message display data (regardless of all text display, title display, etc.) contains a message ID independently assigned to each message.

A user of the mobile radio communications terminal 11 selects a hyperlink (underlined portion) on the displayed screen using a key of a terminal, and a key assigned to the display of 'SELECT' displayed at the bottom of the screen is pressed, thereby executing an instruction embedded in the link (not displayed). The instruction can be a read instruction for a corresponding text embedded in the title portion of the link-displayed message, a call to a specific number embedded in the link of the voice reproducing process, and the recording process, etc, described later.

Furthermore, the screen displayed immediately before can be displayed by pressing the key assigned to the display of 'BACK' at the bottom on the screen.

Then, the BBS host 8 detects whether or not a message or a menu item ('GENERATE A NEW TOPIC', 'DISPLAY THE NEXT PAGE', and 'RETURN TO THE PREVIOUS PAGE') on the initial screen has been selected (steps S102 and S114). When one of the menu items 'DISPLAY THE NEXT PAGE' and 'RETURN TO THE PREVIOUS PAGE' (page jump item) is selected, the next page or the previous page of the initial screen is transmitted after being read from the HDD 68 (step S115).

If the menu item 'GENERATE A NEW TOPIC' is selected, control is passed to step S116.

If a specific message is selected from the title list on the initial screen in step S102, then the title of the selected message, a sender name (handle name, etc.), and the date of generation are transmitted together with the display data of the action selection screen (step S103).

The action selection screen is, for example, a screen shown in FIG. 5B, and the title of the selected message, a sender name (handle name, etc.), and the date of generation are displayed together with a menu item showing an operation which can be performed by a user of the mobile radio communications terminal 11.

The electronic bulletin board service system according to the present invention can process voice data in comparison with a conventional electronic bulletin board service in which only text data is processed, thereby it is possible to generate and reproduce non-character messages. Therefore, on the action selection screen, the following menu items (link) are displayed.

1) 'DISPLAY TEXT' link

When this item is selected, the text in the text format contained in a message is displayed.

2) 'PLAYBACK VOICE' link

This item is displayed only when voice data is attached to a message, and attached voice is replayed by selecting this item. The voice reproducing process is described below in detail.

3) 'RESPOND' link

When this item is selected, a screen for generating a response message (comment) corresponding to the displayed message is displayed.

4) 'GENERATE A NEW TOPIC' link

When this item is selected, a screen for generating a message as a new topic regardless of the displayed message is displayed.

When the link of 'DISPLAY TEXT' is selected on the action selection screen (step S104), the BBS host 8 reads the text of a message from the HDD 68, and transmits it with the display data on the all text display screen (step S105). Furthermore, when a menu item other than 'PLAYBACK VOICE', that is, the link of 'RESPOND' or 'GENERATE A NEW TOPIC' is selected (steps S106 and S107), a corresponding message generation screen display data is transmitted (steps S109 and S116). The process performed when the link of 'PLAYBACK VOICE' is selected on the action selection screen is described separately.

FIG. 5C shows an example of the all text display screen displayed on the mobile radio communications terminal 11 using all text display data transmitted in step S105. As shown in FIG. 5C, on the all text display screen, as on the action selection screen, the title of the selected message, a sender name (handle name, etc.), and the date of generation are displayed, and the entire text of the message, and the link of 'RESPOND' and 'GENERATE A NEW TOPIC' are displayed.

When the link of 'RESPOND' or 'GENERATE A NEW TOPIC' is selected on the all text display screen (step S108), a corresponding message generation screen display data is transmitted (steps S109 and S116). When the display data on the message generation screen is transmitted, the BBS host 8 assigns unique message ID to each message, and transmits it.

When the display data on the response message generating screen is transmitted, the message ID of a message (parent message) being displayed to which a response is to be made, a title to be returned (for example, the title of the parent message preceded by 'Re:' when the parent message is a topic, and the title of the parent message when the parent message is a comment), etc. can be transmitted together.

FIG. 5D shows an example of the response message generating screen. FIG. 5E shows an example of the new message generating screen. On the response message generating screen shown in FIG. 5D, the title transmitted from the BBS host 8 or obtained by the mobile radio communications terminal 11 from the parent message being displayed is shown.

After the BBS host 8 transmits message generating screen display data, it waits for a message to be received from the mobile radio communications terminal 11 (step S110). During the process, the mobile radio communications terminal 11 records voice attached by a user

to a message as necessary. When voice attached to a message is recorded, information specifying an attached message such as the message ID of a message for which voice is recorded is notified by the voice processor 5 as described later. Therefore, upon receipt of the notification, the BBS host 8 temporarily stores it in a predetermined area of the RAM 55.

When generating a message is completed on the mobile radio communications terminal 11, and a key corresponding to 'TRANSMIT' is pressed on the message generation screen, the generated message is received by the BBS host 8. The BBS host 8 refers to data which can be compared with the notification from the voice processor 5 such as a message ID of the received message, etc., and checks whether or not voice is attached to the received message (step S111).

When a message corresponding to the notification stored in the RAM 55 is received, a voice flag indicating that voice is attached to the received message is set in step S112, and a message is stored in the HDD 68 (step S113). If it is determined in step S111 that no voice is attached, the received message is stored as is in the HDD 68 (step S113).

(Voice Processing)

Then, the operation of the voice processor 5 performed when voice attached to a message is read is described below by referring to the flowchart in FIG. 6.

In the present embodiment, when the voice processor 5 is used for, for example, reproducing and recording voice, etc., a special number indicating that the voice processor 5 is used (for example, 00XX for reproducing, 00YY for recording, etc., wherein X is an integral from 1 to 9) is used to make a call.

A call from the mobile radio communications terminal 11 to the voice processor 5 is not called directly from a user, but the user selects the link of 'PLAYBACK VOICE' and 'RECORD' on the screen, and presses the key corresponding to the 'SELECT'. Thus, the application of the mobile radio communications terminal 11 interprets an instruction embedded (written but not displayed) in the link, thereby making a call to the voice processor 5.

When a call is made to the voice processor 5 in the present embodiment, the symbol # and a message ID are attached to the above-mentioned special number. For example, when voice attached to the message whose message ID is '0100' is to be read, '00XX#0100' is called. Similarly, when voice is to be recorded in the message whose message ID is '0100', '00YY#0100' is called.

When a message is specified on the BBS initial screen (FIG. 5A) and then display data of the action selection screen (FIG. 5B) is transmitted, if BBS host 8 detects a voice flag from the selected message to which a voice message is attached, the above-described call number is transmitted by embedding itself in the link of 'PLAYBACK

VOICE' contained in the display data of the action selection screen. Practically, if a message whose message ID is '0100' is specified on the BBS initial screen (FIG. 5A), and voice is attached to the message, then the call number '00XX#0100' is embedded in the link of 'PLAYBACK VOICE' when the display data on the action selection screen (FIG. 5B) is transmitted.

Similarly, in the link of 'RECORD' contained in the message generating screen display data transmitted in response to the selection of the link of 'GENERATE A NEW TOPIC' and 'RESPOND', a call number '00YY#0300' is embedded using the message ID ('0300') assigned to the new message.

When a call is made to '00XX' (or '00YY'), the MSC 31 which receives the call number through the base station 21 recognizes (or by inquiring of the central control station not shown in the attached drawings) that it is a call to the voice processor 5, and calls the voice processor 5.

(Operation of Voice Processor - reproducing voice)

First, the operations of the voice processor 5 performed when it is called by the reading number '00XX' (and a subsequent message ID) are described below by referring to the flowchart in FIG. 6. The voice processor 5 answers the call (step S201). At this time, the line between the voice processor 5 and the mobile radio communications terminal 11 is connected.

The voice processor 5 recognizes by the call using '00XX' that a reproducing process is requested, and obtains

a number by subtracting # from the number subsequent to '00XX', that is, a message ID (step S202). Then, a voice guidance such as 'The voice attached in the message is reproduced. If you are ready, press '#'. If the reproducing process is suspended, then press '*'.', etc. is read from the voice DB 10, and transmitted to the user (step S203).

When DTMF detector 57 detects that the # key is pressed in step S204, the voice DB 10 is retrieved using the message ID obtained in step S202 (step S205). Then, the retrieved voice data is read (step S206).

While reproducing voice data, it is detected whether or not a suspending key '*' assigned in advance has been pressed, and the reproducing process is performed until the recorded voice data is completely reproduced or the suspending key is pressed (steps S207 and S208).

When the recorded voice data is completely reproduced or the suspending key is pressed, the voice processor 5 disconnects the line between the voice processor 5 and the mobile radio communications terminal 11 (step S209).

Thus, while reading the voice, it is desired that the screen of the mobile radio communications terminal 11 displays the screen on which the link of 'PLAYBACK VOICE' is selected, that is, the action selection screen shown in FIG. 5B according to the present embodiment. If a terminal switches into a calling display when a call is called to the voice processor 5, then a disconnection to the voice

processor 5 can be detected to return to the display of the action selection screen.

(Operation of Voice Processor - recording voice)

The operations of the voice processor 5 performed when it is called by the recording number '00YY' (and a subsequent message ID) are described below by referring to the flowchart in FIG. 7. The voice processor 5 answers the call (step S301). At this time, the line between the voice processor 5 and the mobile radio communications terminal 11 is connected.

The voice processor 5 recognizes by the call using '00YY' that a recording process is requested, and obtains a number by subtracting # from the number subsequent to '00YY', that is, a message ID (step S302). Then, a voice guidance such as 'The voice to be attached in the message is recorded. If you are ready, please press the '#' key. If the recording process is completed, then please press the '*' key.', etc. is reproduced from the voice DB 10, and transmitted to the user (step S303).

When DTMF detector 57 detects that the '#' key is pressed in step S304, the process of recording voice from the mobile radio communications terminal 11 is started (step S305).

While recording voice data, it is detected whether or not a suspending key '*' assigned in advance has been pressed, and the recording process is performed until a

predetermined upper recording time limit has been reached or the suspending key is pressed (steps S306 and S307).

When the upper recording time is reached or the recording suspending key is pressed, the voice processor 5 disconnects the line between the voice processor 5 and the mobile radio communications terminal 11 (step S308). Then, a voice data file having the message ID obtained in step S302 as a file name is stored in the voice DB 10 (step S309).

Then, the voice processor 5 notifies the BBS host 8 of the information specifying a message for which voice is recorded, that is, the message ID according to the present embodiment, through the network I/F 54 (step S310).

While performing a voice recording process, as performing a voice reproducing process, it is desired that the screen of the mobile radio communications terminal 11 displays the screen on which the link of 'record' is selected, that is, the message generation screen shown in FIGS. 5D and 5E according to the present embodiment. If a terminal switches into a calling display when a call is made to the voice processor 5, then a disconnection to the voice processor 5 can be detected to return to the display of the message generation screen.

(Message Data Format)

FIGS. 8A to 8E show examples of the data format of message data according to the present embodiment, and a

change in data contents obtained when a response message to which voice is attached is generated.

The message data is comprised of the following fields as shown in FIG. 8A

1) 'MESSAGE ID' field 101

A field for storing a message ID assigned by the BBS host 8

2) 'PARENT MESSAGE ID' field 102

A field for storing a message ID of a parent message based on which a comment is generated as a response message

3) 'TITLE' field 103

A field for storing the title of a message

4) 'TEXT' field

A field for storing the text of a message

5) 'VOICE FLAG'

A flag indicating whether or not there is voice data relating to a message. If any, it is set to "1".

6) 'SENDER' field

A field for storing information specifying a sender of a message, for example, a handle name, a mail address, etc.

7) 'TRANSMISSION TIME' field

A field in which a time assigned to the clock of the mobile radio communications terminal 11 transmitting data is written.

Described below is how each field of message data changes when a response message for which voice is recorded is generated.

First, when the link of 'RESPOND' is selected on the action selection screen (FIG. 5B) or the all text display screen (FIG. 5C), and a key corresponding to 'SELECT' is pressed, the message ID assigned to a generated message ('1101' in this example) and the message ID ('885' in this example) of the parent message to be answered are transmitted together with message generation screen display data from the BBS host 8. Upon receipt of the information, the application program of the mobile radio communications terminal 11 stores the IDs respectively in the MESSAGE ID field 101 and the PARENT MESSAGE ID field 102. For a response message according to the present invention, the title for the response message using the title of the parent message is automatically generated, and is stored in the TITLE field 103 (FIG. 8B)

When a user enters text in the 'BODY:' column on the message generation screen, the contents are stored in the TEXT field (FIG. 8C). Then, in the voice recording process as described above, the voice added to the message is recorded. When the voice is completely recorded, the message ID ('1101') is notified by the voice processor 5 to the BBS host 8. According to the present embodiment, whether or not the voice recording process is performed does

not affect the field value of the message data in the mobile radio communications terminal 11.

When the user completes generating a message, selects the link of 'TRANSMIT' from the message generation screen, and presses the key corresponding to 'SELECT', the electronic mail address of the mobile radio communications terminal 11 is stored in a SENDER field 106. From the clock in the mobile radio communications terminal 11, the year, month, day, and time are obtained and stored in a TRANSMISSION TIME field 107 (FIG. 8D), and then transmitted to the BBS host 8. In each embodiment of the present invention, it is not always necessary to input characters in the TEXT field, but a message can comprise voice data only.

When the BBS host 8 receives a message, it refers to the message ID notified from the voice processor 5 and stored in the RAM 55, and checks whether or not there is a message ID corresponding the received message. As a result, since the same message ID exists, the BBS host 8 sets a VOICE FLAG field 105 of the message data to 1. Then, the electronic mail address stored in the SENDER field 106 of the received message is converted into the handle name by referring to the user DB 67, and is then overwritten in the sender field 106 (FIG. 8E). Then, the message data is stored in the HDD 68.

(Second Embodiment)

According to the first embodiment, a call is made to the voice processor 5 using a specific number to which a message ID is added when voice is processed. However, in a case that the mobile radio communications terminal 11 notifies the BBS host 8 of the information specific to the mobile radio communications terminal 11 such as a subscriber number, a terminal number, etc.(or the MSC 31 notifies the BBS host 8 of such information through the Internet gateway 4) when the mobile radio communication terminal 11 communicates data with the BBS host 8, and the same information or the specific information which can correspond one to one to the information given to the BBS host 8 is transmitted when the mobile radio communications terminal 11 makes a call to the voice processor 5, the mobile radio communications terminal 11 does not have to notify the voice processor 5 of a message ID when the mobile radio communications terminal 11 establishes a communications line with the voice processor 5.

For example, assume that, as the simplest example, the mobile radio communications terminal 11 notifies the BBS host 8 of a subscriber number during the communications, and notifies the destination of the subscriber number on the mobile radio communications terminal side in the normal communications.

FIG. 9 is a flowchart of the operations of the BBS host 8 according to the present embodiment. The same operation as that in the process (FIG. 4) according to the first

embodiment is assigned the same step number, and description of the duplicated operations is omitted here.

As apparent from the comparison between FIGS. 4 and 9, the BBS host 8 according to the present embodiment is different from that according to first embodiment in that the BBS host 8 according to the present embodiment relates to a voice process. That is, if the link of 'PLAYBACK VOICE' is selected on the action selection screen (FIG. 5B), the BBS host 8 according to the first embodiment takes no action, but the BBS host 8 according to the present embodiment detects whether or not the link of 'PLAYBACK VOICE' is selected (step S501). When the link of 'PLAYBACK VOICE' is selected, the BBS host 8 according to the present embodiment notifies the voice processor 5 of the message ID of the message in which the link of 'PLAYBACK VOICE' has been selected (step S502).

In a case that voice is recorded, after storing a message (step S113), the BBS host 8 according to the present embodiment notifies the voice processor 5 of the message ID of the stored message (step S503).

The reason why the message ID is notified in the step s503 is that since the voice processor 5 is in the state with the recorded voice data associated with the subscriber number, voice data may not be distinguished from each other if the same subscriber records plural pieces of voice data. Therefore, after storing a message, the BBS host 8 notifies the voice processor 5 of the subscriber number of the mobile

radio communications terminal 11 from which the message is transmitted, and the message ID. As a result, the voice processor 5 can store the voice data file in the voice DB 10 with the latest recorded data corresponding to the notified subscriber number associated with the message ID notified together with the subscriber number.

FIG. 10 is a flowchart of the recording process performed by the voice processor 5 according to the present embodiment. As in FIG. 9, the operation also shown in FIG. 7 according to the first embodiment is assigned the same step number, and the explanation is omitted here.

The present embodiment is different from the first embodiment in that a subscriber number is obtained in the recording process (step S401), the subscriber number is transmitted to the BBS host 8 (step S402) after the voice data is temporarily stored in association with the subscriber number in the voice DB 10, the notification that the message ID corresponding to the subscriber number is transmitted from the BBS host 8 is awaited (step S403), and the voice data file is stored in the voice DB 10 (step S404) by associating the latest recorded voice data corresponding to the subscriber number notified from the BBS host 8 with the message ID notified together with the subscriber number.

Thus, by finally storing in the voice DB 10 the message ID (or another information specific to the message) associated with voice data, the voice DB is retrieved during

the reproducing process according to the information specific to the message used during the storing process, thereby reproducing correct voice data.

According to the present embodiment, the reproducing process performed by the voice processor 5 can be described by referring to the flowchart in FIG. 6 showing the reproducing process according to the first embodiment.

However, it is possible to reproduce voice without a message ID from the mobile radio communications terminal 11 as described above in the voice recording process. In this case, a message ID obtained in step S202 as shown in the flowchart shown in FIG. 6 can be obtained according to the notification from the BBS host 8 (step S502 as shown in FIG. 9), not from the mobile radio communications terminal 11.

(Third Embodiment)

According to the first embodiment, the voice flag of message data is added by the BBS host 8. However, if the flag is set by the mobile radio communications terminal 11, the communications of a message ID, etc. between the BBS host 8 and the voice processor 5 can be removed.

Practically, after the voice recording process is terminated, the mobile radio communications terminal 11 detects that the line between the mobile radio communications terminal 11 and the voice processor 5 is disconnected (step S308 shown in FIG. 7), the voice flag

of message data is set to '1', and then the message is transmitted. That is, in the state shown in FIG. 8E, the voice flag 105 is set to '1'.

As a result, it is not necessary to perform the checking process and the voice flag setting process in the BBS host 8 (steps S111 and S12 shown in FIG. 4). Therefore, it is not necessary to receive a message ID from the voice processor 5, and the communications between the mobile radio communications terminal 11 and the voice processor 5 are not required.

(Other Embodiments)

In the above-mentioned embodiments, different numbers for the voice processor 5 are used between the reproducing process and the recording process. However, the same numbers may be used if the reproducing and recording processes can be specified according to the voice guidance.

Furthermore, according to the above-mentioned embodiments, the messages entered in the BBS are configured by characters only, but an image can be included.

As described above, the present invention can provide an electronic bulletin board service available from a mobile radio communications terminal having limited display ability.

CLAIMS

1. An electronic bulletin board service system, comprising:

a voice processor connected to a telephone network and capable of reading and recording voice data; and

a server device, connected to a computer network, having a character message database storing character messages, reading a requested character message from said character message database in response to read request, and transmitting the read character message, wherein

said server device comprises at least one of:

message transmission means for transmitting, in response to the read request, data of a requested character message to a sender of the read request when the read request for a character message associated with the voice data is received, and transmitting voice reproducing data required to allow said voice processor to reproduce the voice data associated with the character message to the sender of the read request; and

message generation data transmission means for transmitting, in response to a generation request for a new character message to be accumulated in said character message database, data required to generate a character message, and voice recording data required to record voice associated with the new character message using the voice processor to a sender of the generation request.

2. The system according to claim 1, wherein:

said read request and said new generation request are sent from a telephone terminal capable of communicating data through a computer network; and

said voice reproducing data and said voice recording data are data which is required to make a call from said telephone terminal to said voice processor.

3. The system according to claim 2, wherein

said voice reading data and said voice recording data contain a command to instruct said telephone terminal to make a call to said voice processor.

4. The system according to any one of claims 1 to 3, wherein

said voice data is associated with said character message according to information specific to said character message.

5. The system according to any one of claims 1 to 4, wherein

said server device is connected to said voice processor as capable of communicating with each other; and

said server device and said voice processor transmit to and receive from each other data required to detect whether or not voice data recorded during generation of the character message is associated with a new character message received by said server device.

6. The system according to any one of claims 1 to 5, wherein

a character message stored in a character message database contains information indicating whether or not there is associated voice data.

7. A method of controlling an electronic bulletin board service system, comprising:

a voice processor connected to a telephone network and capable of reading and recording voice data; and

a server device, connected to a computer network, having a character message database storing character messages, reading a requested character message from the character message database in response to a read request, and transmitting the message, wherein

said method comprises at least one of:

in said server device, transmitting, in response to the read request, data of a requested character message to a sender of the read request when the read request for a character message associated with the voice data is received, and transmitting voice reproducing data required to allow said voice processor to read the voice data associated with the character message to the sender of the read request; and

in said server device, transmitting, in response to a generation request for a new character message to be accumulated in said character message database, data required to generate a character message, and voice recording data required to record voice associated with the

new character message using the voice processor to a sender of the generation request.

8. The method of controlling according to claim 7, wherein:

said read request and said new generation request are sent from a telephone terminal capable of communicating data through a computer network; and

said voice reproducing data and said voice recording data are data which is required to make a call from said telephone terminal to said voice processor.

9. The method of controlling according to claim 8, wherein

said voice reproducing data and said voice recording data contain a command to instruct said telephone terminal to make a call to said voice processor.

10. The method according to any one of claims 7 to 9, wherein

said voice data is associated with said character message according to information specific to said character message.

11. The method according to any one of claims 7 to 10, wherein

said server device is connected to said voice processor as capable of communicating with each other; and

said server device and said voice processor transmit to and receive from each other data required to detect whether or not voice data recorded during generation of the

new character message is associated with a new character message received by said server device.

12. The method according to any one of claims 7 to 11, wherein

a character message stored in a character message database contains information indicating whether or not there is associated voice data.

FIG. 1

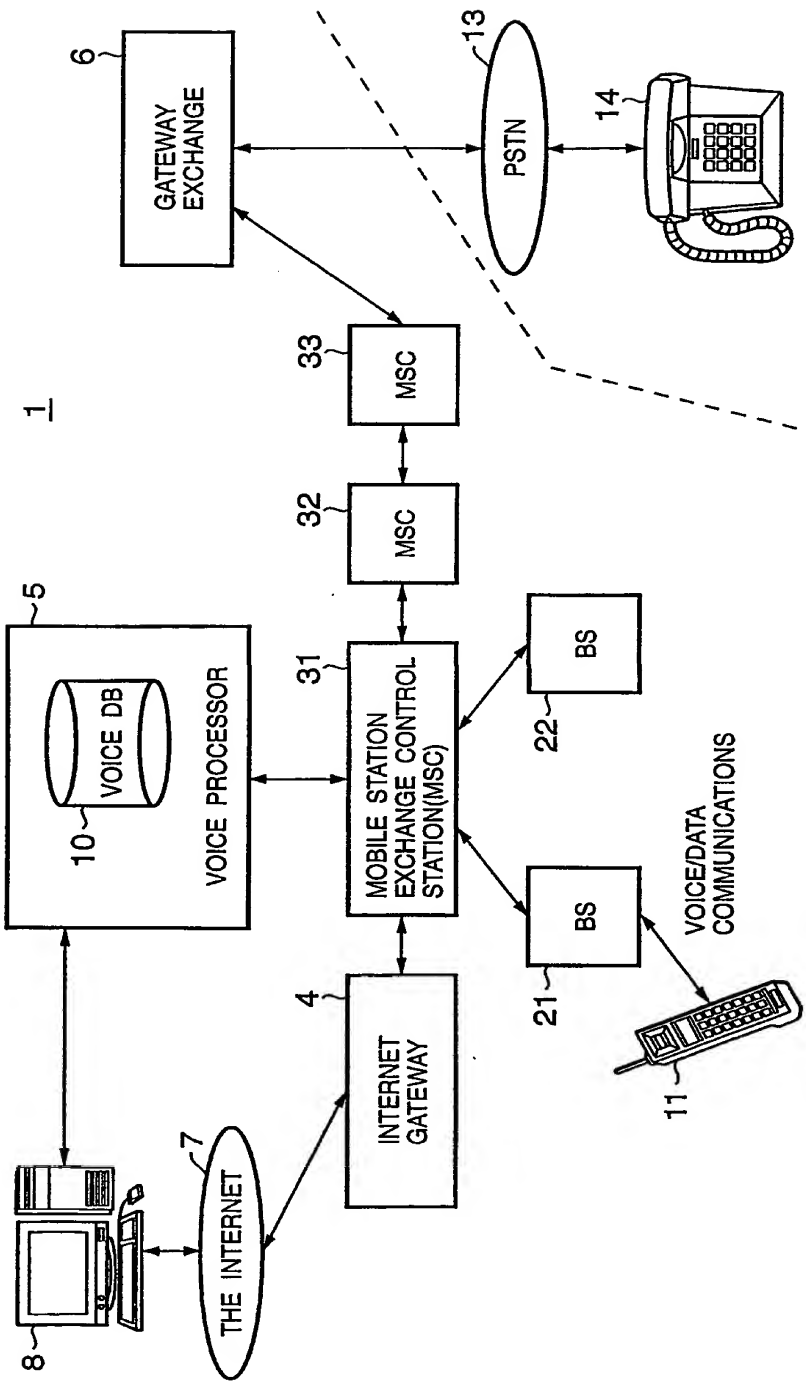

1
6
GATEWAY EXCHANGE
13
PSTN
14
33
MSC
32
MSC
5
VOICE PROCESSOR
10
VOICE DB
31
MOBILE STATION EXCHANGE CONTROL STATION(MSC)
22
BS
21
BS
VOICE/DATA COMMUNICATIONS
11
4
INTERNET GATEWAY
7
THE INTERNET
8

FIG. 2

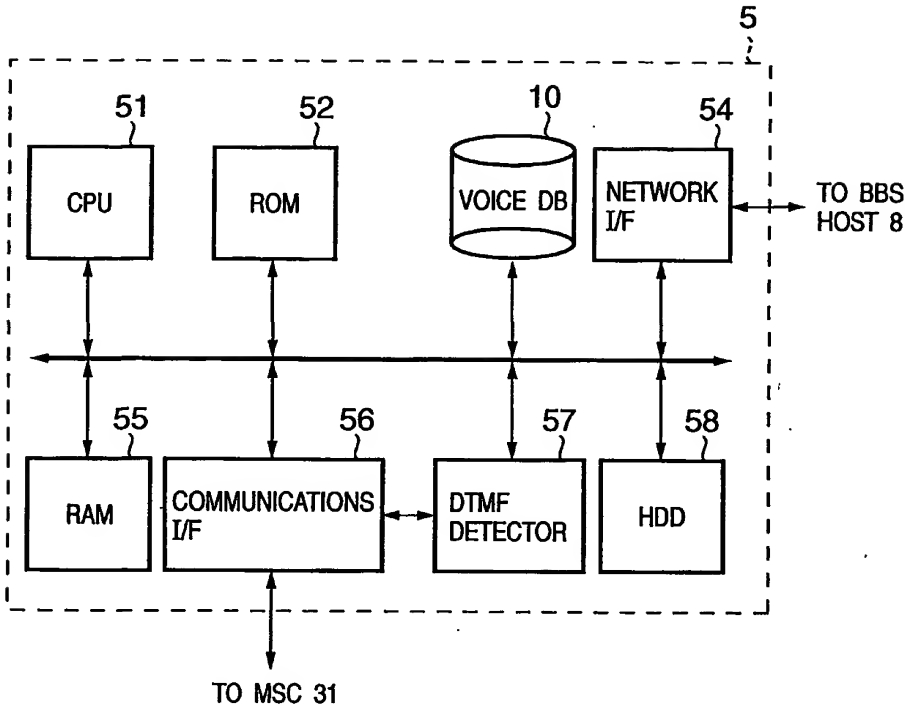

5
51
52
10
54
CPU
ROM
VOICE DB
NETWORK I/F
TO BBS HOST 8
55
56
57
58
RAM
COMMUNICATIONS I/F
DTMF DETECTOR
HDD
TO MSC 31

FIG. 3

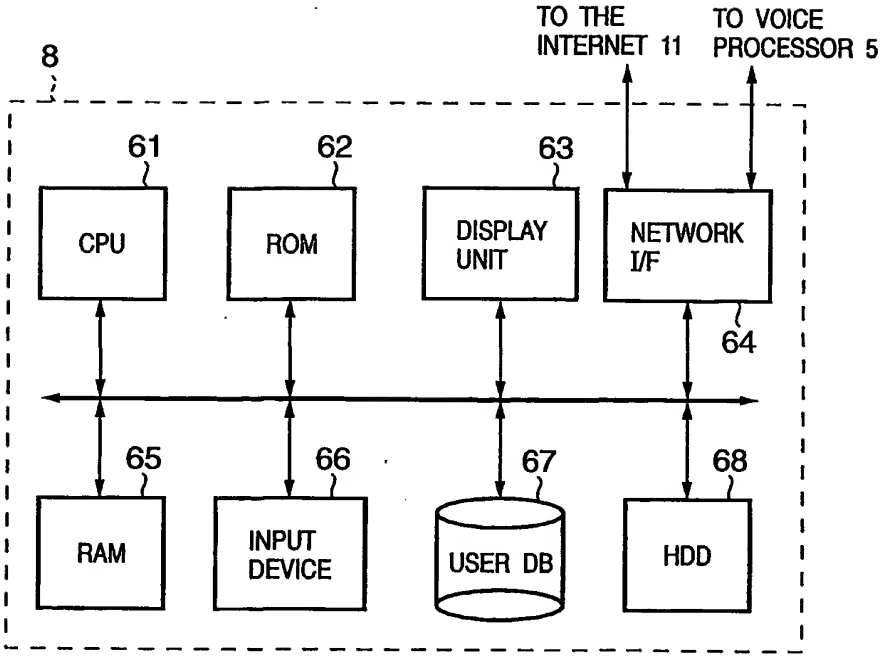
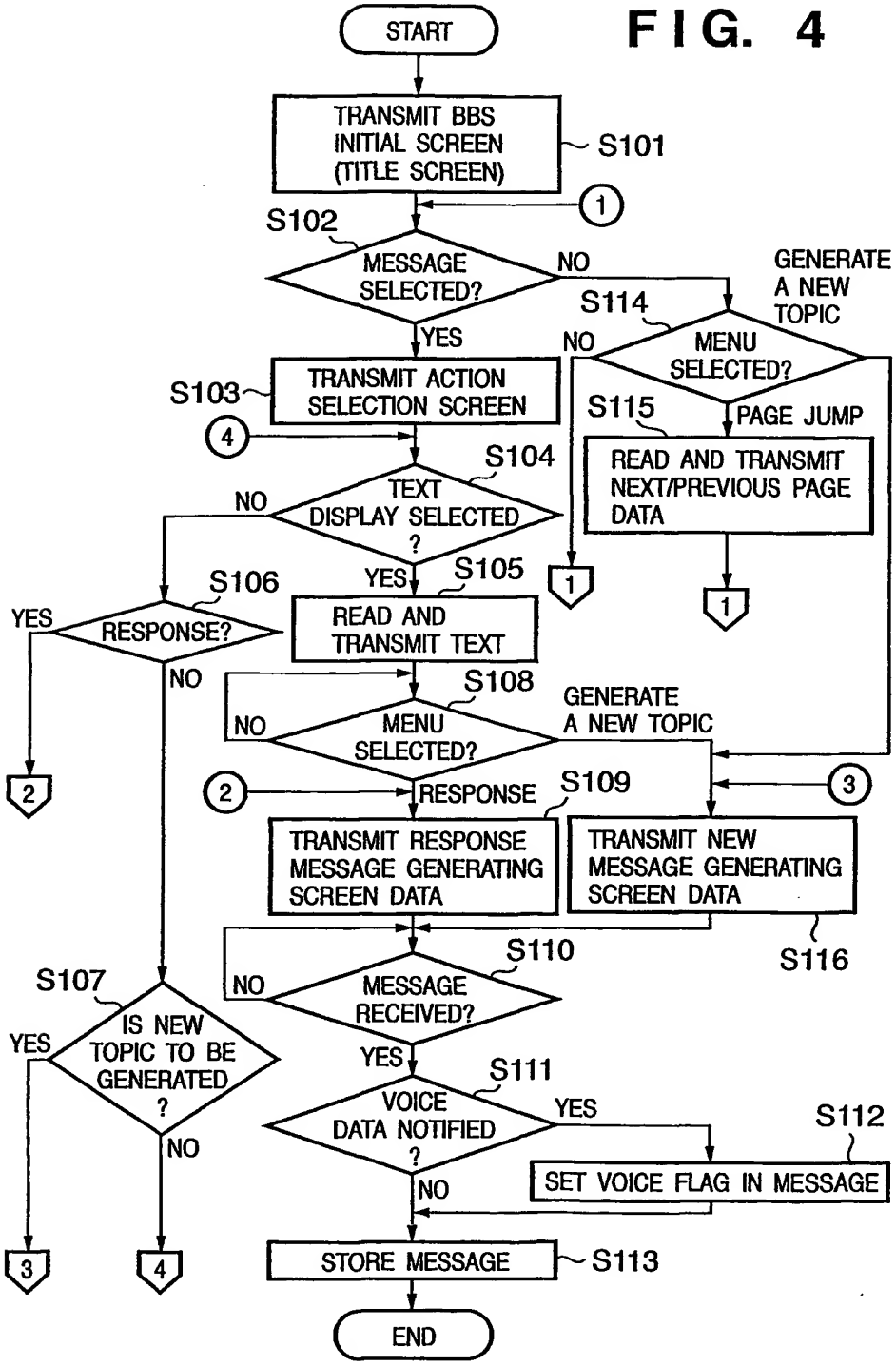

TO THE INTERNET 11
TO VOICE PROCESSOR 5
8
61
62
63
CPU
ROM
DISPLAY UNIT
NETWORK I/F
64
65
66
67
68
RAM
INPUT DEVICE
USER DB
HDD

FIG. 4


START
TRANSMIT BBS INITIAL SCREEN (TITLE SCREEN)
S101
1
S102
MESSAGE SELECTED?
NO
GENERATE A NEW TOPIC
S114
MENU SELECTED?
YES
NO
S103
TRANSMIT ACTION SELECTION SCREEN
S115
PAGE JUMP
4
S104
READ AND TRANSMIT NEXT/PREVIOUS PAGE DATA
TEXT DISPLAY SELECTED ?
NO
YES
S105
S106
YES
RESPONSE?
READ AND TRANSMIT TEXT
NO
S108
GENERATE A NEW TOPIC
NO
MENU SELECTED?
2
RESPONSE
S109
3
TRANSMIT RESPONSE MESSAGE GENERATING SCREEN DATA
TRANSMIT NEW MESSAGE GENERATING SCREEN DATA
S116
S110
S107
NO
MESSAGE RECEIVED?
YES
IS NEW TOPIC TO BE GENERATED ?
YES
S111
VOICE DATA NOTIFIED ?
YES
S112
NO
NO
SET VOICE FLAG IN MESSAGE
3
4
STORE MESSAGE
S113
END

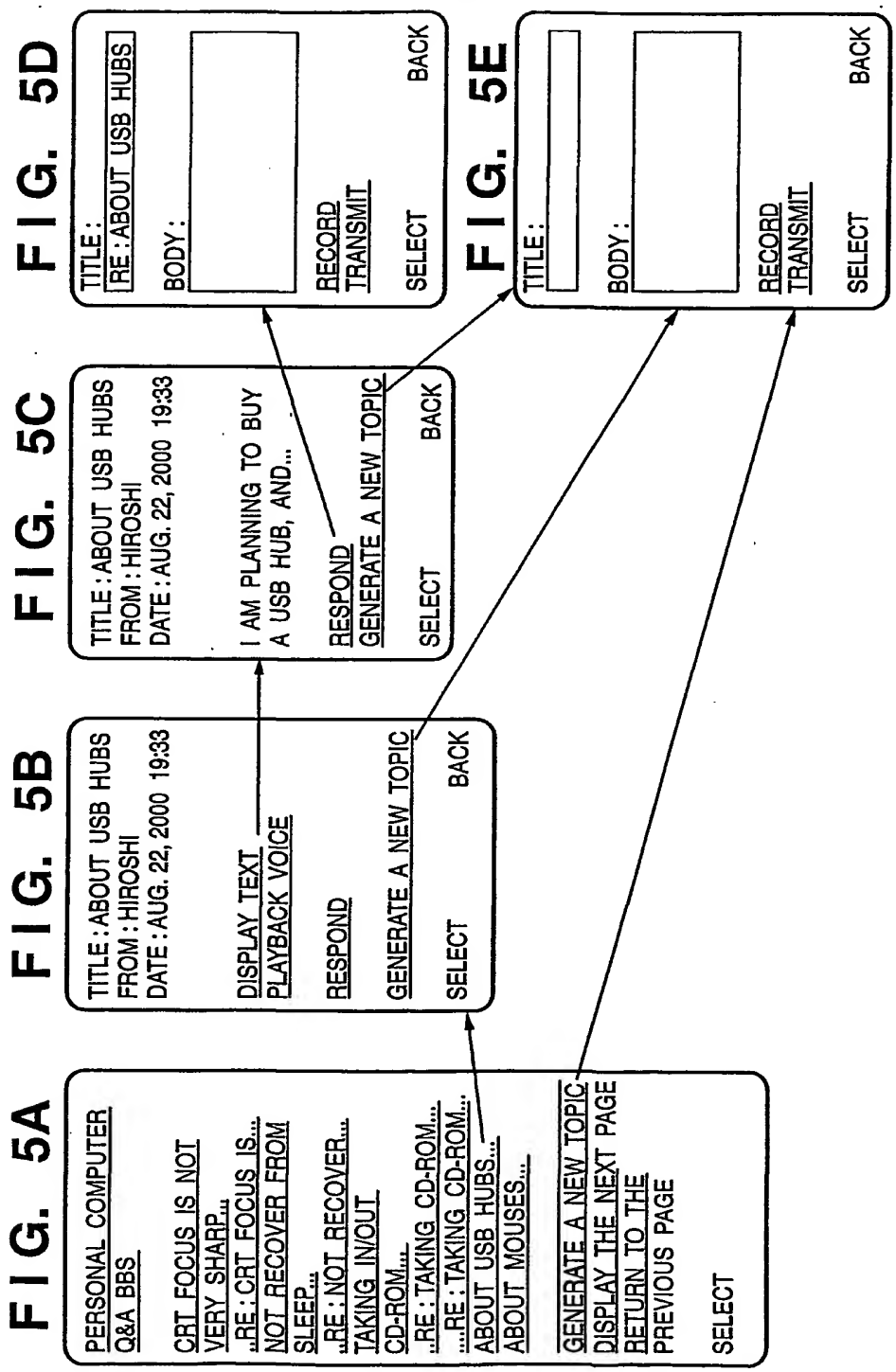


FIG. 5A
PERSONAL COMPUTER
Q&A BBS
CRT FOCUS IS NOT VERY SHARP...
..RE : CRT FOCUS IS... NOT RECOVER FROM SLEEP...
..RE : NOT RECOVER... TAKING IN/OUT CD-ROM...
..RE : TAKING CD-ROM...
....RE : TAKING CD-ROM...
ABOUT USB HUBS...
ABOUT MOUSES...
GENERATE A NEW TOPIC
DISPLAY THE NEXT PAGE
RETURN TO THE PREVIOUS PAGE
SELECT
FIG. 5B
TITLE : ABOUT USB HUBS
FROM : HIROSHI
DATE : AUG. 22, 2000 19:33
DISPLAY TEXT
PLAYBACK VOICE
RESPOND
GENERATE A NEW TOPIC
SELECT
BACK
FIG. 5C
TITLE : ABOUT USB HUBS
FROM : HIROSHI
DATE : AUG. 22, 2000 19:33
I AM PLANNING TO BUY A USB HUB, AND...
RESPOND
GENERATE A NEW TOPIC
SELECT
BACK
FIG. 5D
TITLE :
RE : ABOUT USB HUBS
BODY :
RECORD
TRANSMIT
SELECT
BACK
FIG. 5E
TITLE :
BODY :
RECORD
TRANSMIT
SELECT
BACK

FIG. 6

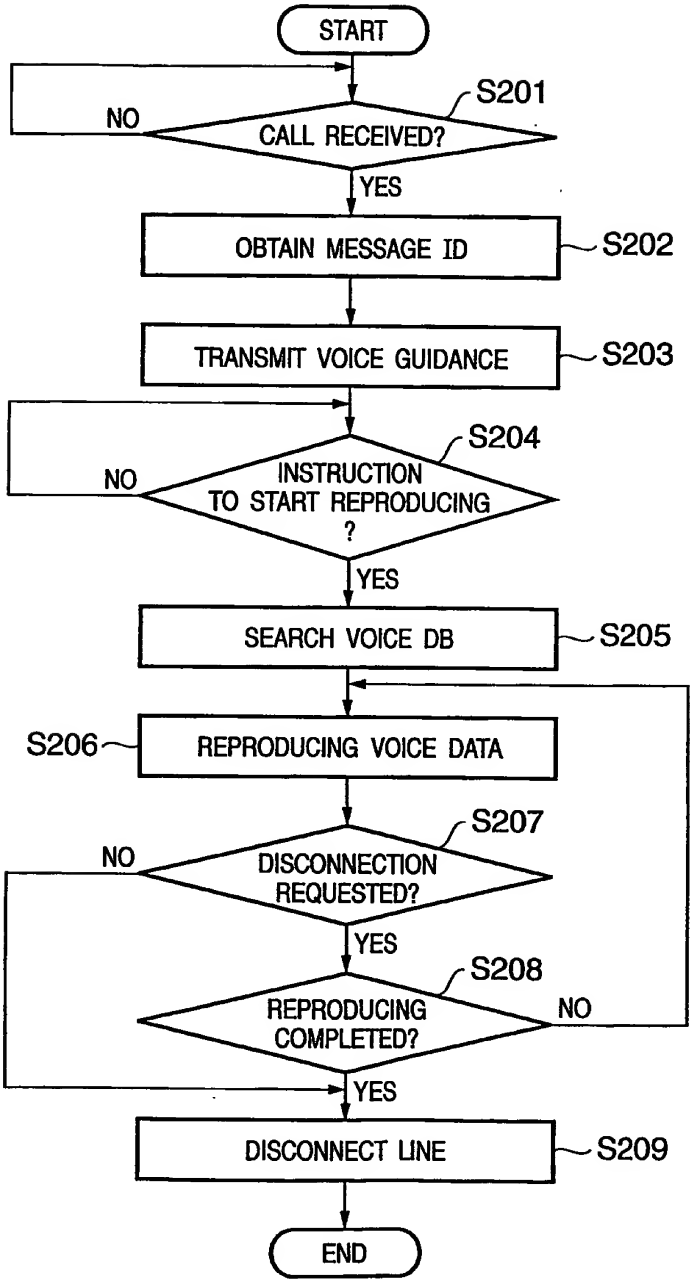
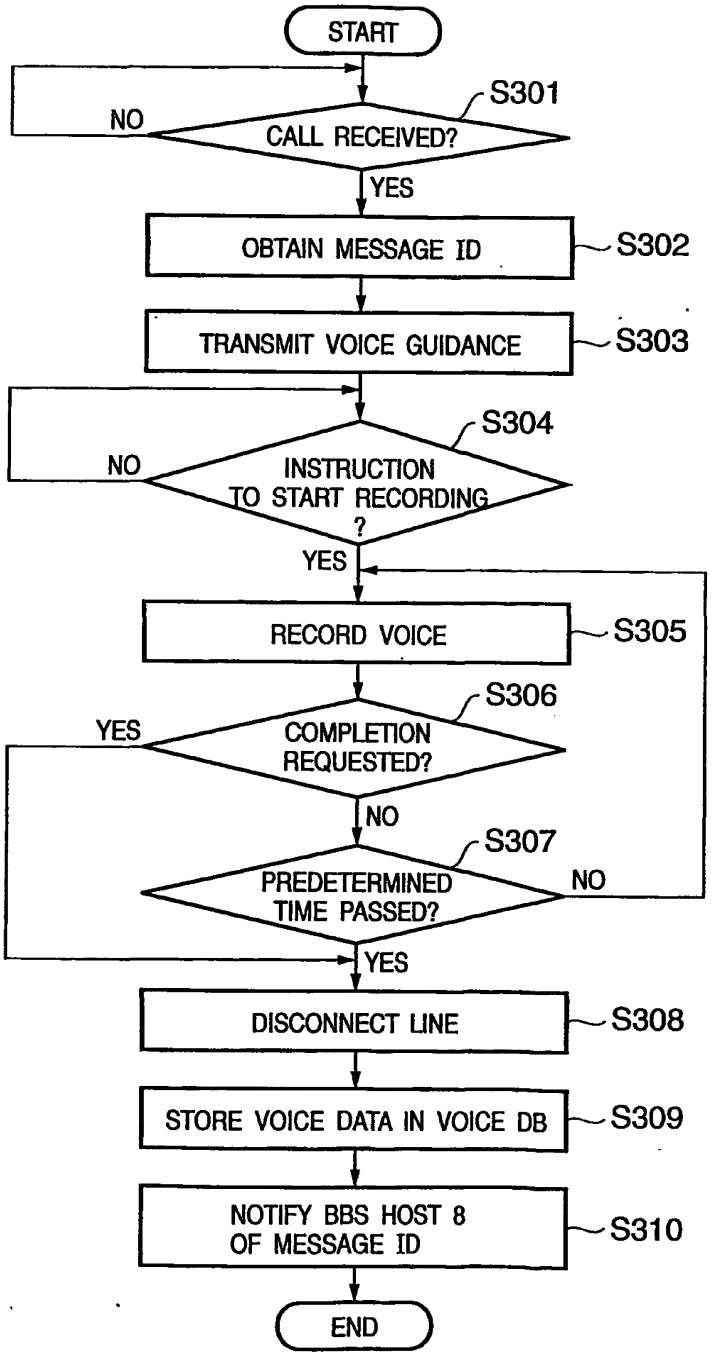

START
S201
NO
CALL RECEIVED?
YES
OBTAIN MESSAGE ID
S202
TRANSMIT VOICE GUIDANCE
S203
S204
NO
INSTRUCTION TO START REPRODUCING ?
YES
SEARCH VOICE DB
S205
S206
REPRODUCING VOICE DATA
S207
NO
DISCONNECTION REQUESTED?
YES
S208
REPRODUCING COMPLETED?
NO
YES
DISCONNECT LINE
S209
END

FIG. 7


START
S301
NO
CALL RECEIVED?
YES
OBTAIN MESSAGE ID
S302
TRANSMIT VOICE GUIDANCE
S303
S304
NO
INSTRUCTION TO START RECORDING ?
YES
RECORD VOICE
S305
S306
YES
COMPLETION REQUESTED?
NO
S307
PREDETERMINED TIME PASSED?
NO
YES
DISCONNECT LINE
S308
STORE VOICE DATA IN VOICE DB
S309
NOTIFY BBS HOST 8 OF MESSAGE ID
S310
END

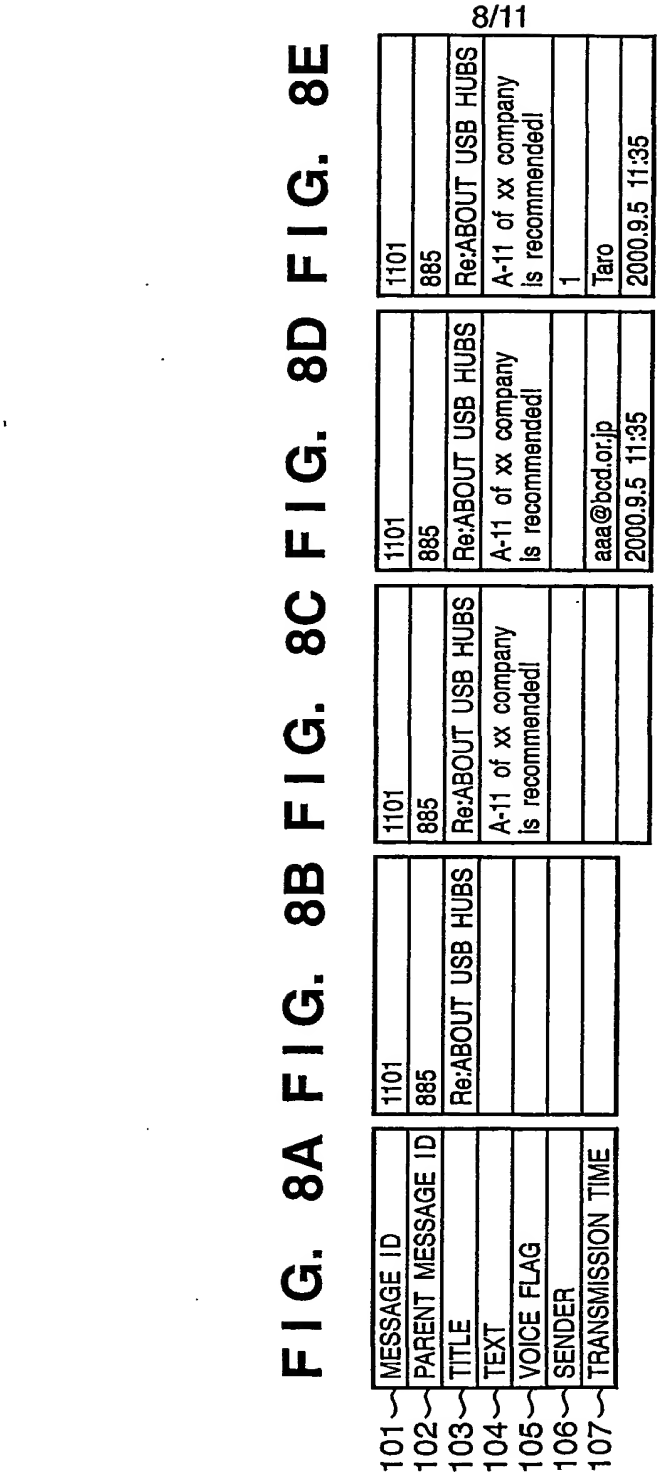


FIG. 8A FIG. 8B FIG. 8C FIG. 8D FIG. 8E

FIG. 9

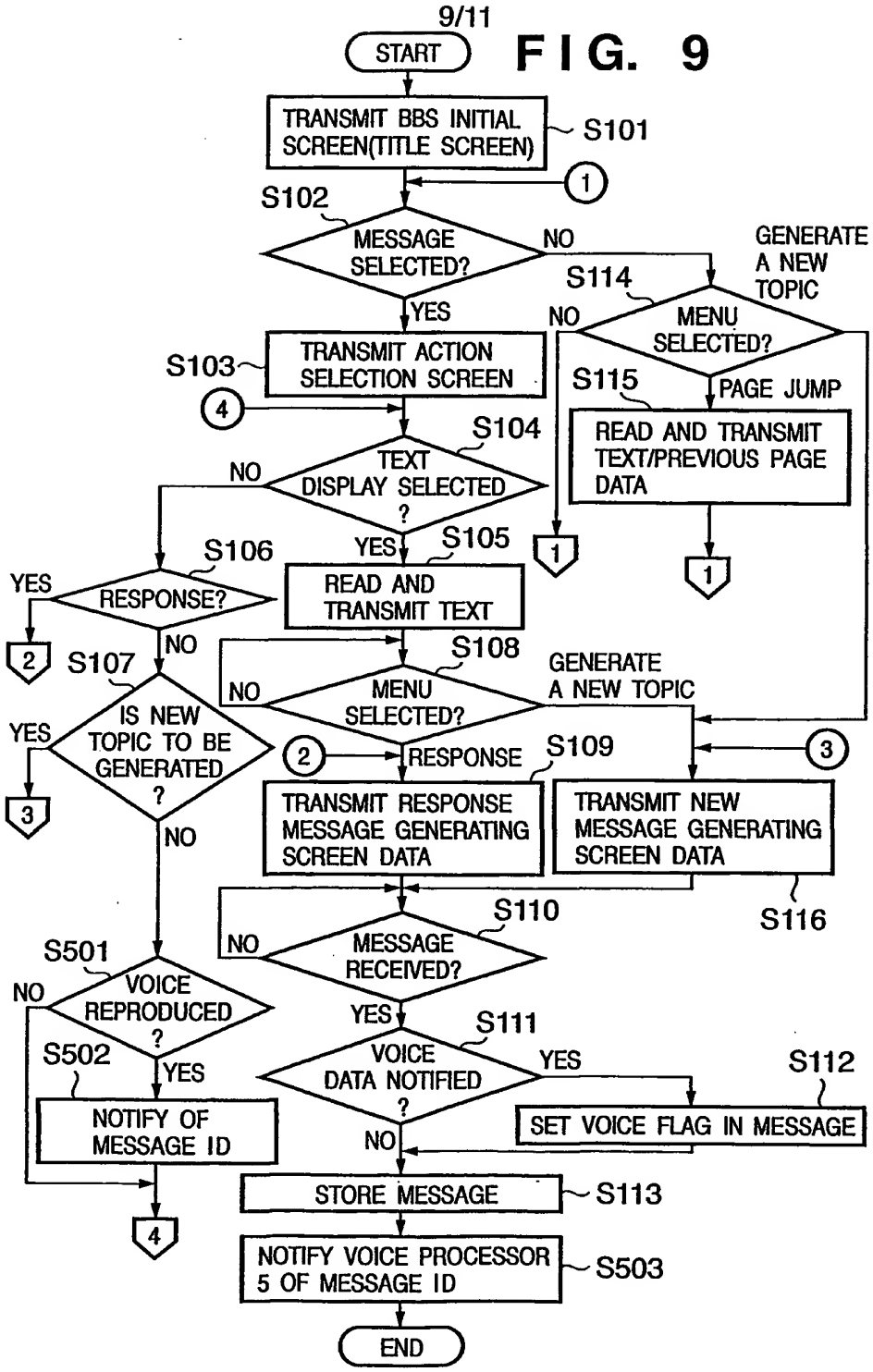

START
TRANSMIT BBS INITIAL SCREEN(TITLE SCREEN)
S101
1
S102
MESSAGE SELECTED?
NO
YES
GENERATE A NEW TOPIC
S114
MENU SELECTED?
NO
S103
TRANSMIT ACTION SELECTION SCREEN
S115
PAGE JUMP
READ AND TRANSMIT TEXT/PREVIOUS PAGE DATA
4
S104
TEXT DISPLAY SELECTED ?
NO
YES
S105
S106
YES
RESPONSE?
READ AND TRANSMIT TEXT
2
NO
S107
S108
GENERATE A NEW TOPIC
NO
MENU SELECTED?
YES
IS NEW TOPIC TO BE GENERATED ?
2
RESPONSE
S109
3
3
NO
TRANSMIT RESPONSE MESSAGE GENERATING SCREEN DATA
TRANSMIT NEW MESSAGE GENERATING SCREEN DATA
S116
S110
NO
MESSAGE RECEIVED?
S501
NO
VOICE REPRODUCED ?
YES
S111
S502
YES
VOICE DATA NOTIFIED ?
YES
S112
NOTIFY OF MESSAGE ID
SET VOICE FLAG IN MESSAGE
NO
STORE MESSAGE
S113
4
NOTIFY VOICE PROCESSOR 5 OF MESSAGE ID
S503
END

FIG. 10

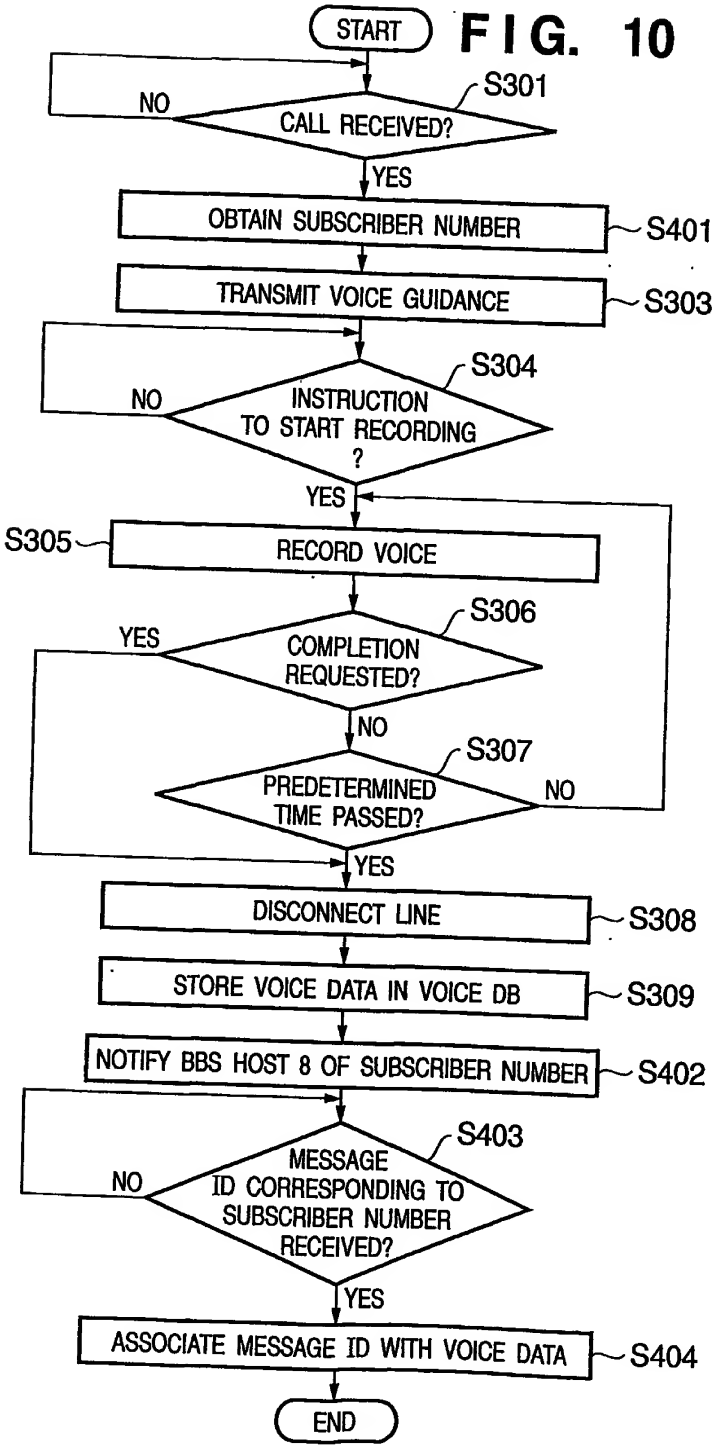

START
S301
NO
CALL RECEIVED?
YES
OBTAIN SUBSCRIBER NUMBER
S401
TRANSMIT VOICE GUIDANCE
S303
S304
NO
INSTRUCTION TO START RECORDING ?
YES
S305
RECORD VOICE
S306
YES
COMPLETION REQUESTED?
NO
S307
PREDETERMINED TIME PASSED?
NO
YES
DISCONNECT LINE
S308
STORE VOICE DATA IN VOICE DB
S309
NOTIFY BBS HOST 8 OF SUBSCRIBER NUMBER
S402
S403
NO
MESSAGE ID CORRESPONDING TO SUBSCRIBER NUMBER RECEIVED?
YES
ASSOCIATE MESSAGE ID WITH VOICE DATA
S404
END

FIG. 11A

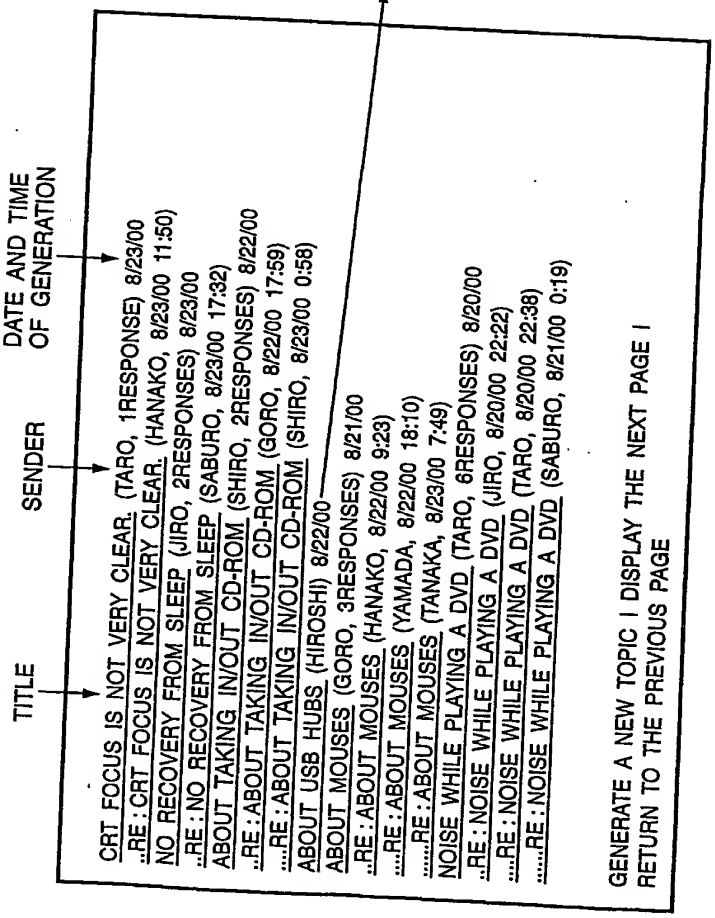
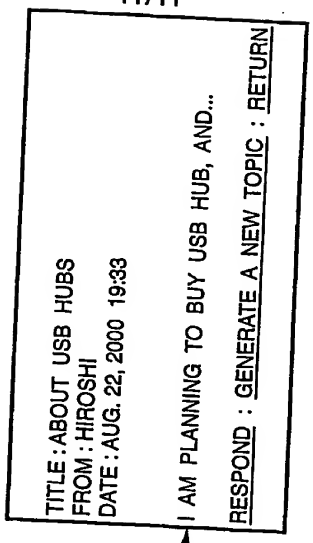



FIG. 11B